

-29-

WHAT IS CLAIMED:

1. A nucleic acid molecule comprising a nucleic acid encoding at least a heavy chain variable region binding domain of a disease antigen-specific antibody fused to a nucleic acid encoding at least a binding portion of an immunostimulatory ligand such that expression of said nucleic acid molecule yields a fusion protein having the antibody variable region domain at its amino terminus and the binding portion of the immunostimulatory ligand at its carboxyl terminus, wherein said immunostimulatory ligand is a CD40 ligand.
2. The nucleic acid molecule of Claim 1, further comprising a nucleic acid encoding at least one antibody constant region.
3. The nucleic acid molecule of Claim 1, further comprising a nucleic acid encoding a light chain antibody or antibody fragment fused with said nucleic acid encoding said antibody variable region.
4. The nucleic acid molecule of Claim 3, wherein said nucleic acid encoding said light chain antibody or antibody fragment is fused to said nucleic acid encoding said antibody variable region by a nucleic acid encoding a flexible peptide linker.
5. The nucleic acid molecule of Claim 1, wherein said disease antigen-specific antibody is specific for a tumor antigen.
6. The nucleic acid molecule of Claim 1, wherein said disease antigen-specific antibody is specific for a viral antigen.
7. The nucleic acid molecule of Claim 1, wherein said nucleic acid encoding said antibody variable region is fused to said nucleic acid encoding said binding portion of an immunostimulatory ligand by a nucleic acid encoding a linker peptide.
8. The nucleic acid of Claim 1, wherein said CD40 ligand is gp39.

-30-

9. A chimeric protein encoded by the nucleic acid molecule of Claim 1.
10. A chimeric protein comprising a variable region binding domain from a disease antigen-specific antibody at its amino terminus and an extracellular binding portion of an immunostimulatory ligand at its carboxyl terminus, wherein said immunostimulatory ligand is a CD40 ligand.
11. The chimeric protein of Claim 10, further comprising at least one antibody constant region.
12. The chimeric protein of Claim 10, further comprising a light chain antibody or antibody fragment.
13. The chimeric protein of Claim 12, wherein said light chain antibody or antibody fragment is fused to the amino terminal end of said protein by a flexible peptide linker.
14. The chimeric protein of Claim 10, wherein said disease antigen-specific antibody is specific for a tumor antigen.
15. The chimeric protein of Claim 10, wherein said disease antigen-specific antibody is specific for a viral antigen.
16. The chimeric protein of Claim 10, further comprising a linker peptide between said antibody variable region and said immunostimulatory ligand binding domain.
17. The chimeric protein of Claim 10, wherein said CD40 ligand is gp39.
18. A pharmaceutical composition comprising the chimeric protein of Claim 9.
19. A pharmaceutical composition comprising the chimeric protein of Claim 10.

-31-

20. A vector comprising the nucleic acid molecule of Claim 1.
21. A host cell comprising the nucleic acid molecule of Claim 1.
22. A method of making a chimeric protein comprising a variable region binding domain from a disease antigen-specific at its amino terminus and an
5 extracellular binding portion of an immunostimulatory ligand at its carboxyl terminus comprising expressing the nucleic acid molecule of Claim 1 in a host cell and isolating the resulting chimeric protein.
23. A method of enhancing disease antigen-specific antibody responses in a subject who expresses said disease antigen comprising administering the
10 chimeric protein of Claim 10, to said subject such that disease antigen-specific immune responses are enhanced.
24. A method of treating a disease in a patient in need of such treatment comprising administering the chimeric protein of Claim 10.
25. A kit comprising the nucleic acid molecule of Claim 1.
- 15 26. A kit comprising the chimeric protein of Claim 10.